

WHAT IS CLAIMED IS:

1. A surgical clamp, comprising:

a clamp head;

a first jaw and a second jaw, each mounted to the clamp head for movement toward and away from each other;

an operative mechanism coupled to the proximal end of at least one of the first jaw and the second jaw; and

an actuating structure connected to the operative mechanism for imparting a parallel opening movement to at least one of the first jaw and the second jaw from a first position to a second position where the first jaw and the second jaw are spaced apart and parallel to one another, the actuating structure selectively imparting further scissors-like opening movement to at least one of the first jaw and the second jaw from the second position to a third position where the first jaw and the second jaw are spaced apart a distance greater than that of the second position.

2. The surgical clamp of claim 1, wherein the other of the first jaw and the second jaw is maintained in a fixed position relative to the clamp head during the opening movement between the first and second jaws.

3. The surgical clamp of claim 1, wherein the first jaw includes a plate structure at the proximal end, the plate structure having an elongate slot formed therein; the second jaw including a plate structure at the proximal end having an elongate slot formed therein, the slots extending in parallel spaced relationships; and the operative mechanism comprises a linkage arrangement having first and second guide pins extending into respectively each of the elongate slots, whereby the actuating structure imparts opening movement to the linkage arrangement by slidably displacing the guide pins in the slots to form the parallel spacing between the jaws.

4. The surgical clamp of claim 3, wherein the slot in the plate structure of the first jaw includes an angled slot portion, whereby upon further actuation of the operative mechanism, the first guide pin is displaced into the angled slot portion causing the linkage arrangement to pivot the first jaw into a scissors-like wider opening between the jaws.

5. The surgical clamp of claim 3, wherein the linkage arrangement comprises a plurality of closeable and openable parallel scissors links.
6. The surgical clamp of claim 4, wherein the first and second jaws of the pair of jaws are simultaneously openable and closeable responsive to actuation of the operative mechanism.
7. The surgical clamp of claim 6, wherein opening movement of the second jaw is provided by a guide pin slidably arranged in a link member of the linkage system.
8. The surgical clamp of claim 1, wherein the clamp head comprises an angled linkage member pivotably attached to the proximal ends of the first and second elongate jaws, the first jaw including a plate structure having a vertically extending slot with an angled upper slot portion; a guide pin at the upper end of the angled linkage member being slidable within the slot whereby upon actuation of the linkage member by the actuating structure the guide pin is displaced upwardly in the slot so as to initially open the first jaw in parallel relationship with the second jaw, and upon the guide pin entering the upper angled slot portion further pivoting the second jaw in a scissors-like wider opening displacement.
9. The surgical clamp of claim 1, wherein elastomeric cushioning means are provided on the facing surfaces of the first and second elongated jaws.
10. The surgical clamp of claim 1, wherein the first and second jaws are curved along the axial lengths thereof to accommodate the curvature of body vessels.
11. The surgical clamp of claim 1, wherein the actuating structure comprises a cable actuatable by extending through an endoscopic or laparoscopic device.
12. The surgical clamp of claim 1, wherein the first jaw and the second jaw are dimensioned to provide an operative length of about 65-75 mm.

13. The surgical clamp of claim 12, wherein the first jaw and the second jaw are spaced apart about 10-12 mm when in the first position, and are spaced apart up to about 40 mm when in the third position.

14. A clamp, comprising:

a first jaw including a first slot extending along a first plane;

a second jaw including a second slot extending along a second plane, the first and second jaws each being arranged such that the first and second planes are substantially parallel to each other, one of the first and second slots having an angled slot portion extending along a third plane at an angle to the first and second planes;

a linkage mechanism having at least a first pin for engagement in the first slot and at least a second pin for engagement in the second slot; and

an actuator for displacing the linkage mechanism from a first position, wherein the first pin and the second pin are positioned in the first and second slots in a substantially parallel configuration, to a second position, wherein one of the first pin and the second pin is positioned within the angled slot portion.

15. The clamp of claim 14, wherein the linkage mechanism comprises a plurality of closeable and openable parallel scissors links.

16. The clamp of claim 14, wherein the first and second jaws are simultaneously openable and closeable responsive to actuation of the linkage mechanism.

17. The clamp of claim 15, wherein opening movement of the second jaw is provided by a guide pin slidably arranged in a link member of the linkage system.

18. The clamp of claim 14, wherein the actuator comprises a cable.

19. The clamp of claim 14, comprising elastomeric cushioning means are provided on the facing surfaces of the first and second elongated jaws.

20. The clamp of claim 19, wherein the elastomeric cushioning means comprise replaceable resilient pads mounted on the jaws, the pads being formed of a fabric or plastic material.

21. A method of occluding a body vessel with a surgical clamp including a clamp head mounting a pair of elongate jaws for movement toward and away from each other, the method comprising:

coupling an operative mechanism to proximal ends of each the jaws; and

connecting an actuating structure to the operative mechanism for imparting parallel opening movement to at least a first one of the pair of jaws from a closed position into a parallel spaced position with a second the jaw, and causing the actuating structure to selectively impart further scissors-like opening movement to the at least first one of the pair of jaws into a wider open position between the jaws.

22. The method of claim 21, wherein the second the jaw of the pair of jaws is maintained in a fixed position with the clamp head during the opening movement between the first and second jaws.

23. The method of claim 21, wherein the parallel spaced motion between the first and second jaws is within a range of about 10-12 mm, and the further scissors-like motion provides for an opening of up to about 40 mm between the jaws.

24. A method of occluding a blood vessel with a clamp, comprising the steps of:
providing a clamp head, comprising:

a first jaw and a second jaw, each mounted to the clamp head for movement toward and away from each other;

an operative mechanism coupled to the proximal end of at least one the first jaw and the second jaw; and

an actuating structure connected to the operative mechanism for imparting parallel opening movement to at least one of the first jaw and the second jaw from a first position to a second position where the first jaw and the second jaw are spaced apart and parallel to one another, the actuating structure selectively imparting further scissors-like opening movement to at least one of the first jaw and the second jaw from the second position to a third position where the first jaw

and the second jaw are spaced apart a distance greater than that of the second position;
creating an opening in a patient's body;
positioning the first jaw and the second jaw in the first position;
passing the clamp head through the opening;
actuating the actuating structure to cause one of the first jaw and the second jaw to move to the third position;
positioning the first jaw and the second jaw such that the blood vessel is disposed between first jaw and the second jaw; and
actuating the actuating structure to cause one of the first jaw and the second jaw to move to the first position to clamp the blood vessel.

25. The method of claim 24, comprising the steps of:
actuating the actuating structure to cause one of the first jaw and the second jaw to move to the second position prior to clamping the blood vessel.
26. The method of claim 24, wherein the opening is a small opening.
27. The method of claim 24, wherein the opening is an intercostal opening.
28. The method of claim 24, wherein the clamp head is passed through a trocar positioned within the opening.